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L5: Entry 6 of 71

File: USPT

Nov 27, 2001

US-PAT-NO: 6324571

DOCUMENT-IDENTIFIER: US 6324571 B1

TITLE: Floating single master operation

DATE-ISSUED: November 27, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hacherl; Donald J.	North Bend	WA		

US-CL-CURRENT: 709/208; 705/9, 707/100, 707/104.1, 709/201, 709/204, 709/209

ABSTRACT:

A system for switching exclusive authority to perform a predefined system-wide task between machines in a network comprises: a database having an attribute for identifying a master server in the domain to exclusively perform the predefined network-wide task. The database is replicated on each of the servers in the domain. The attribute may be changed so as to change the master server to another one of the servers in the domain. While multiple servers in the network may be physically capable of performing the predefined system-wide task, at any one time only one server may be designated as the master server. The master server role may, however, be "floated" among various servers in the network. At any particular moment, the machine which currently holds the master server role is referred to as the master server role owner and is identified in an attribute, role owner, that is stored on each server in the network. Switching authority to perform a particular network-wide task requires updating the attribute on each of the servers in the network.

24 Claims, 9 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 9

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L8: Entry 7 of 13

File: USPT

Feb 13, 2001

DOCUMENT-IDENTIFIER: US 6189043 B1

TITLE: Dynamic cache replication in a internet environment through routers and servers utilizing a reverse tree generation

Abstract Paragraph Left (1):

The distribution of replica caches of information is dynamically optimized among the regions of a network, based upon the changing usage patterns. Initially, a single server in a first region stores the primary copy of information. A router in the first region receives service request messages from the plurality of users throughout network, directed to the server storing the primary copy. To determine if it is justified to deploy a replica cache, the router transmits a monitor request message to other routers in other regions of the network, requesting them to monitor all service requests in their respective regions, being directed to the primary copy in the first server. The first router then computes an optimum assignment of a replica copy of the information, for storage in at least one newly assigned server in the network. The first router transmits a replication message to the newly assigned server, to enable it to store the replica copy of the information and provide service to user terminals in a newly assigned set of regions of the network. The first router also transmits an assignment message to the other routers in the network, to enable them to redirect traffic from their respective regions to either the newly assigned server or to the first server.

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L6: Entry 6 of 82

File: USPT

May 29, 2001

US-PAT-NO: 6240414

DOCUMENT-IDENTIFIER: US 6240414 B1

TITLE: Method of resolving data conflicts in a shared data environment

DATE-ISSUED: May 29, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Beizer; Mordechai M.	Scarsdale	NY		
Berg; Daniel	Wilton	CT		
Scullard; Rand	New York	NY		
Simha; Pradeep R.	St. James	NY		
Solomon; Mark A.	N. Massapequa	NY		

US-CL-CURRENT: 707/8; 707/1, 707/10

ABSTRACT:

A method and system for automatically resolving data conflicts in a shared data environment where a plurality of users can concurrently access at least portions of a master data file is presented. Users process data files by means of local copies of a master data file. When an attempted update of a master data file with an edited data file from a user is detected, the updating file is analyzed to determine if any changes made are in conflict with changes made to the master data file by a second user. If a conflict is detected, it is resolved by merging the updating file into the master file according to a predefined set of rules. For conflicts which are not resolved by rule-based reconciliation, at least one user is notified of the conflict and presented with conflict resolving information and the conflict is resolved according to user input.

37 Claims, 11 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 11

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L1: Entry 16 of 136

File: USPT

Oct 9, 2001

US-PAT-NO: 6301589

DOCUMENT-IDENTIFIER: US 6301589 B1

TITLE: Replication method

DATE-ISSUED: October 9, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hirashima; Yoko	Yokohama			JPX
Kikuchi; Satoshi	Yokohama			JPX
Yui; Hitoshi	Yokohama			JPX

US-CL-CURRENT: 707/204; 707/104.1, 707/200, 707/201, 707/8

ABSTRACT:

A directory system for performing replication of directory data, in which a directory server on the consumer side can reconstruct replica data using a backup kept at any point in time. Information 10c for specifying the entry changed for the last time by replication performed by replication service 10' is recorded into the replica data 9c managed by the directory server on the consumer side. Based on this information, the replication service 10' can know the entry on which next replication is to be performed. Thus, the replication service 10' can recognize the difference between the master data 9s managed by the directory server on the supplier side and the replica data 9c, and can perform replication on this difference when only the replica data 9c is reconstructed using the backup.

14 Claims, 28 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 20

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L1: Entry 105 of 136

File: USPT

Sep 8, 1998

US-PAT-NO: 5805824

DOCUMENT-IDENTIFIER: US 5805824 A

TITLE: Method of propagating data through a distributed information system

DATE-ISSUED: September 8, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kappe; Frank Michael	Graz			ATX

US-CL-CURRENT: 709/242

ABSTRACT:

A method of propagating data through a distributed information system is closed wherein in a computer implemented distributed information system, a method of maintaining referential integrity of a plurality of links and documents by propagating updates from a server to a plurality of servers, comprising the steps of; i) the server maintaining an ordered list of the plurality of servers in the distributed information system; ii) the server maintaining a link database containing the plurality of links for locating remote documents stored remotely which are referenced by documents stored locally at the server; iii) the server maintaining an update list including messages reflecting changes to local documents and links and remote documents and links; iv) selecting a priority value (p) with which to transmit the update list wherein the priority value is a real number greater than or equal to 1; v) on a predetermined clock cycle, the server transmitting the update list according to the priority value wherein, the server transmits the update list to a receiving server located adjacent to it on the ordered list, to an integer portion of p-1 other receiving servers selected at random from the ordered list and to another receiving server selected at random from the ordered list with a probability equal to a fractional portion of p; vi) the receiving servers updating their link databases and the locally stored documents with messages from the update list and appending the receiving servers respective lists of object data with the received list of object data; and vii) repeating steps v) through vii).

20 Claims, 14 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 8

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L1: Entry 85 of 136

File: USPT

Oct 26, 1999

DOCUMENT-IDENTIFIER: US 5974429 A

TITLE: Method and apparatus for updating distributed databases in a telecommunications network

Abstract Paragraph Left (1):

A method and apparatus for updating user data stored on databases distributed throughout a telecommunications network is described. A central database server stores a master copy of the user data from which a transaction journal may be created. The transaction journal includes every change in user data entered at the central database server during provisioning sessions. The remote nodes of the network contain databases which ideally store user data which is consistent with the user data records in the central database server. To achieve this the new transaction journal entries are propagated at regular intervals to the remote nodes. During a transition period, the central database server and the remote nodes are updated with new software. To accommodate nodes during the transition period which can be running on either the old or new software, the transaction journal preferably has two sets of user data, a first set for use with nodes running the old software and a second set for nodes running the new software. When a remote node is to be updated it is connected to the central database server and an audit is made of the software version and the age of the user data stored on the remote node. Based on the version number of the software, either the first or second set of transaction journal updates are propagated towards and applied on the remote node without halting call processing at the remote node.

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L1: Entry 97 of 136

File: USPT

Mar 16, 1999

DOCUMENT-IDENTIFIER: US 5884322 A

TITLE: Method and apparatus for creating and assigning unique identifiers for network entities and database items in a networked computer system

Detailed Description Paragraph Right (74):

In a third situation, two or more servers indicate that they are the master server entity, because their own copies of the replicated designation of the master server entity are inconsistent. In this case, the inconsistency is typically transient, as this is a replicated database, and normal update propagation algorithms will eventually detect and correct the inconsistency. Once the inconsistency is corrected, only one machine indicates that it is the master server entity.

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L1: Entry 105 of 136

File: USPT

Sep 8, 1998

DOCUMENT-IDENTIFIER: US 5805824 A

TITLE: Method of propagating data through a distributed information system

Brief Summary Paragraph Right (12):

For the purposes of this discussion, "robustness" means that the distributed information system should not rely on a single server or a single system connection to work at all times, nor should it assume that all servers of a given set are available at a given time. Prior art services such as Multi-Server Transaction, Master-Slave and Distributed Update control systems, as will be described in greater detail below, are all examples that do not scale in this respect.

Brief Summary Paragraph Right (23):

Another prior art attempt at maintaining referential integrity is what is known as a Master/Slave System comprising one primary server (the master) and a plurality of secondary servers (the slaves). The master server holds a master copy of the replicated document and services all update requests. The plurality of slave servers are updated by receiving notification of changes from the master server or by downloading copies of the master copy. Users may read the document from both the master and slave servers, but write only to the master copy of the document.

Brief Summary Paragraph Right (29):

The advantage of the Distributed Update Control method is its robustness as there is no single point of failure even if approximately 50% of the server-set fails. However, the primary disadvantage of this method is scalability, because the server-set for any document must be known to all servers in the set. Furthermore, greater than 50% of the servers in the set have to be contacted before every write or read operation. For example, if the server-set contains 1000 servers, a response from 501 servers is required. This requirement may be relaxed for read operations if the weak consistency approach is acceptable. However, it is mandatory for write operations to ensure that no conflicting updates can occur.

Detailed Description Paragraph Right (7):

It is also preferable for consistent updates that data propagation may only take place from a pre-defined server. However, in contrast to the previously described master/slave method, this pre-defined server is not a single server for the entire distributed system. The server selected for performing the data propagation depends on the surface document or surface link being modified, inserted and/or removed. For example, with regard to surface documents, updates and subsequent propagation of update data is performed by the server which maintains the original surface document; for surface links, update data propagation is performed by the server which holds the surface document from which the link originates. With respect to partial system 10 of FIG. 1, server 18 is responsible for updates of surface document 34, while the surface link 26b from surface document 30 to surface document 34 would be updated by server 14 (assuming that surface link 26b originated from surface document 30). This reduces the problem of overloading any given server, while eliminating the problem of conflicting updates as updates are sequential. For security reasons, users wishing to update surface document 34 must have write permission for that surface document. Permission is therefore checked by server 18 maintaining the originating document 34.

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Term	Documents
CACHE.USPT.	20688
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<u>L8</u>	(identif\$6 or determin\$3) same (changes or updates or modification) same (master adj2 file or source file)	163	<u>L8</u>
<u>L7</u>	15 same replicat\$3	2	<u>L7</u>
<u>L6</u>	(identif\$6 or determin\$3) same (changes or updates or modification) same master (file or copy)	82	<u>L6</u>
<u>L5</u>	(identif\$6 or determin\$3) same (changes or updates or modification) same (master near2 (file or copy) or source file)	245	<u>L5</u>
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<u>L2</u>	5765171.pn.5694546.pn. or 5689642.pn. or 5630116.pn. or 5434994.pn.	3	<u>L2</u>
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<u>L7</u>	(web site or web server) same (source file or master or primary or original) same replicat\$3 same (chang\$3 or updat\$ or modif\$6)	1	<u>L7</u>
<u>L6</u>	(web site or web server) same (master or primary or original) same replicat\$3 same (chang\$3 or updat\$ or modif\$6)	1	<u>L6</u>
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<u>L4</u>	(web or server or internet) with (master or primary or original) same (replicat\$3 or distribut\$3 or propgat\$3) same (chang\$3 or updat\$ or modif\$6)	176	<u>L4</u>
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<u>L2</u>	carter.ini and homere.xa.	0	<u>L2</u>
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